CHAPTER FIVE

Financial Analysis of Producing Municipal Solid Waste Compost

5.1 Economic Analysis of Composting Municipal Solid Waste

Economic analysis was performed using the data obtained from the Balangoda Urban Council to find the incremental benefits due to composting (Table 5.1).

Following cost components were considered in the analysis.

1. Capital cost for construction of composting plant
2. Machinery cost and other equipment related to composting
3. Management cost (Labour, Transportation, loading, unloading, sorting, pilling, electricity, water etc). It should be noted that costs for open dumping were deducted to calculate the actual cost of composting
4. Production of compost (cost of nutrient enrichments, packaging, etc)
5. Cost of management of the recycling product sales center

Table 5.1: Cost Components Considered in the Analysis

1. Capital Cost	**Rs.**
1. Building cost/ construction cost	12.5 million
2. Equipment cost	
Tractors	4 million
Bobcats	2.9 million
Other Machinery	1.0 million
Mamoties.....etc	0.7 million
2. Recurrent Cost	
Labour	
Salary for labourers (for each activity) ex. Collecting, sorting, loading unloading, packaging etc	351900 per month
Overtime payment/day (for above each activity)	5000 per month
No of Supervisors/wages	15000 per month
Transportation charges of garbage handling/loading/ sorting/pilling	350000 per month
Electricity and other costs.....	10000 per month
3. Production compost	
Amount of waste generated per day	27 MT
Amount of compost generated (Kg/day)	1400
Cost of packaging	Rs. 35 per 50 kg
If enriched with inorganic nutrient, amount of money spent for 1kg of compost	Rs.7.00 per kg
Price of compost/kg	8.00 per kg
4. Recycling	
Income from recycling products (Rs/day or Rs. /month)	Rs.45000 per month
5. Sale center management cost	Rs. 20000 per month

Source: Balangoda LA, 2012

Benefits considered in the analysis included the following components

1. Market value of compost
2. Earnings by selling recycling products

Assumptions and conditions used in the analysis are as follows:

1. Incremental benefits of compost production were taken into account because the cost of waste management is an essential expense that these authorities have to bear to maintain a healthy environment without considering any profits
2. Lifespan of the composting plant is 25 years
3. Composting mechanism and the generated waste to compost ratio in the year 2012 is assumed to be prevailing until 2037
4. The discount rate was taken as 7% as stipulated by the Central Bank of Sri Lanka in 2012.
5. Waste generation amount remains unchanged during the period 2012 to 2037.
6. Land value for composting and dumping was taken as same and was not included in the calculations
7. Government policies regarding this mechanism remain unchanged during the total period of the project
8. The extended environmental benefits of composting of municipal solid waste such as benefits as a soil conditioner , reduction of land degradation, provision of micro nutrients and reduction of water pollution due to reduced usage of chemical fertilizer were omitted in the analysis due to lack of data

Results of Cost Benefit Analysis

Calculated Net Present Value (NPV) for composting is Rs. 16340892.8 and Benefit Cost Ration (B/C ratio) is 1.44. Overall, the investment for waste management via composting has generated positive results with the positive value of NPV and also it has shown more than 1 for B/C ratio. The Economic Internal Rate of Return (EIRR) indicates the financial viability of capital investment. The IRR is 5% in the project. The investment can be earned within 9 to 10 years period of the project. All the values such as NPV, B/C ratio and EIRR will be much higher when this analysis includes the environmental benefits.